The Chemical Age

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The Spirit of British Commerce

THE dignified declaration of War at the very moment appointed for Divine Service on Sunday morning came as a relief to a nerve-racked nation. A trade and technical paper has no need to discuss the issues; they are clear as daylight in the conscience of forty odd millions in these islands. The nation is now only concerned with divine service, for it is not inappropriate to claim that designation for the work that lies ahead of all. All effort is from this moment dedicated to the Nation. Individualism has no place for the period of the conflict. Individualism is the philosophy of peace and will reappear when the nation has finished with the grim business of war.

That, however, does not mean that all must abandon what they are doing. The life and living of the nation depend upon the maintenance of all those things and services with which trade and industry are concerned, and there will be no stampede to abandon essential duty. The older men, and women young and old, can serve the nation best by preparing themselves to shoulder the burdens that must be laid down by the younger men required for the heavier work of defeating the enemy.

As in 1914-18 this journal, with a staff which is already much depleted, will do its best to keep intact the essential fabric of British industry until the happy day when this Force Madness ceases and this time ceases for good. Let no one mistake the resolute determination with which the British people have entered upon a course which, above all others, they would have avoided if they honourably could. Such a measure of calm and restraint, when all the nation's physical property and spiritual possessions were being thrown into the scale, will go down in the history of the world as unique even in British annals.

For one thing the British position on September 3, 1939, was different in many respects from that of August 4, 1914. Then war came with only a week-end's warning to a people that had never contemplated and was totally unprepared for the ordeal ahead. Now the prospect of a European conflict has been staring the nation in the face ever since the Czech crisis of a year ago, and it has never in its history undergone so thorough a preparation for war. There is accordingly a feeling of quiet confidence in the face of unknown perils, which seems to have put panic instinctively out of men's and women's minds. Anxiety, of course, there has been in plenty. It has chiefly arisen from the unknown factor of the air menace to the civil population. But such fears as have been expressed have almost invariably been for others, for little children that have not yet had a chance of shaping their own lives, and for old folk who are in no position to help themselves. This feeling of deep compassion has been largely responsible for the astonishing reply to the call for volunteers for a fourth, and entirely new, line of defence. Those who lived through the early days of 1914 find it difficult to bridge the gulf which separates that time from September, 1939.

Still, in one respect the position is not dissimilar. British industry, now as then, finds itself suddenly bereft of a considerable proportion of its staff and facing the prospect of official intervention and control according ill with the traditional freedom of the British citizen to perform his allotted task in his own way. This same citizen has the advantage this time of his experience of a quarter of a century ago. The prospect of giving up his freedom temporarily in order to enjoy it thereafter permanently, was then novel to him, and the new war machine that was created did not function without some creaking. He knows better now, and will willingly make every sacrifice for the common good. An excellent example of the working of this mood was the dilution agreement made some days ago between the employers' associations and trade unions in the engineering industries. This time Great Britain begins its munitions campaign in the knowledge that trade union rules will not restrict it. Last time it took many months of difficult negotiations, when the horse had almost bolted from the stable, for this result to be achieved. This is the spirit in which British commerce and industry offer their services to the state in its time of trial. Every shoulder goes willingly to the wheel, and a nation accustomed to hard work is prepared to redouble its efforts in order again to make the world a decent place to live in. The fight ahead can be expressed in the simplest terms as one for justice and liberty. It is the high resolve of the British people to secure justice and liberty for oppressed European peoples, and to make its own conception of these things, without which life is not worth living, shine more brightly by its own example.

THE TENNIS TOURNAMENT

THE CHEMICAL AGE regrets to announce that its ninth annual Tennis Tournament due to be played on Saturday, September 16, must now be cancelled. The proprietors desire to record their gratitude to all the players who have taken part in the preliminary rounds, and to the directors of the Associated Portland Cement Manufacturers, Ltd., who had kindly placed their courts at Snaresbrook at the disposal of THE CHEMICAL AGE for the Finals. Thanks are also due to Messrs. Thomas Hill-Jones, and Mr. W. Lloyd Willey, who had again kindly promised to present personal trophies to the winners and runners-up of the challenge cups competed for annually.

NOTES AND COMMENTS

London Carries On

ELSEWHERE in this issue we print particulars of a few of the emergency regulations issued by the Government as they affect the chemical industry. Details are also given of the new addresses in the country to which certain firms have evacuated in the past few days. Some concerns engaged in the manufacture of explosives and other war materials are naturally not disclosing their whereabouts, though THE CHEMICAL AGE was somewhat surprised, on telephoning one of the biggest firms in the industry, to find that not even a switchboard operator had been left behind to deal with inquiries. We are, however, living under entirely novel conditions, and it will be some weeks before the effects of the war on our daily business can be gauged. For the moment, those of us who are working in London are finding it much less crowded, except for special constables and auxiliary firemen—and sandbags. We have to travel to the suburbs without lights in the evening train, but a carriage more or less to ourselves makes up for this small inconvenience.

Humours of A.R.P.

IT is no exaggeration to say that this war is regarded by the whole British people as a crusade—there is none of the " flag-wagging " or other signs of popular excitement so much in evidence in 1914. To the civilian, the preparations against air raids, including the tin helmets of the police, afford the chief evidence that we are at war, together with the carrying of gas masks, already a universal habit. Fortunately, our sense of humour does not desert us at a time of crisis but becomes, if possible, keener. A Yorkshire newspaper reports that a cheery workman was heard asking a fellow 'bus passenger whether he was taking " some extra jock to-day." " Aye, an' tha seems a bit peckish thisen," the other replied without a moment's hesitation, pointing to the gas mask which his companion was also taking to work. In a Surrey village a group of yokels were being warned to go indoors if the siren was heard, and not to stay in the garden. " If I'm told where to go in me own place," one old man remarked, " I'll also tell the warden where to go —and he won't need no overcoat when he gets there, neither !"

Export Policy

IT is too early to say what will be the effect of the war on export trade, beyond the obvious fact that the volume of chemical exports is likely to be reduced. With the growth of totalitarian trading methods, a good deal of discussion has lately taken place on British export policy. There have been demands for " A Square Deal in Trade," the adoption of a new technique to meet the changed conditions, the increase of Imperial Preference and for the greater use of Great Britain's bargaining power. Unfortunately there is no unanimity concerning the nature of the action which should be taken. Some favour bilateral agreements, some the policy of export monopolies. Some urge export subsidies, some the renewal of certain domestic restrictions. Particular interest, therefore, attaches to an article which Mr. Lionel Robbins, Professor in Economics in the London University, has contributed to *Lloyd's Bank Review*. In the first section there is reviewed policies which attempt the rehabilitation of trade by seeking a direct enlargement of foreign demand; in the second, policies which directly or indirectly seek to force exports by subsidies. An attempt is then made to analyse the actual causes restricting the revival of exports. Finally, in the light of this diagnosis, certain general criteria of policy are indicated. Although written before the outbreak of war, this article is worthy of study in full by all who have anything to do with international trade, and no doubt, Lloyd's Bank will be pleased to send a copy of the Review to any who are interested.

The British Association

IT was greatly to the credit of the British Association authorities that they did not allow the uncertainty of last week to prevent their members from assembling at Dundee, even though the meeting had to be curtailed. Those who heard Sir Albert Seward were most impressed by his presidential address, which was prefaced by a dignified reference to the crisis. Men and women who were primarily interested in the pursuit of natural knowledge, he said, had not been backward in taking their full share of work in defence of the realm. The bond of fellowship among scientific workers in all parts of the world was, however, strong enough to constitute a most important and potent influence, leading them to hope that all men would realise that human co-operation and good will in the pursuit of knowledge were essential for the peace of the world. A brief report of the British Association meeting appears on another page.

Trade with Sweden

BRITISH relations with neutral markets are, of course, of special importance, and the talks recently held with the trade delegation from Sweden should bring useful results in the difficult days ahead. The visiting delegates gave much practical advice on Sweden's preferences on colour, designs and styles, and in many cases followed up this advice with the promise to send samples of popular lines for the guidance of British manufacturers. During the discussions it was stated that the Swedish chemical industry obtained much of its plant from the Continent and that British suppliers of plant should improve their contacts with Swedish users. Frequent visits by British representatives were suggested, and also the regular mailing of up-to-date catalogues and frequent advertising in Swedish technical journals. Swedish agents, it was suggested, should be employed in preference to the common practice of an all-Scandinavian agency. The question of price was raised, and the importance of a better delivery for export orders. The Swedish Chemical Association and Import Bureau of the Swedish Export Association offered full co-operation.

Paints and Varnishes

PRODUCTS discussed with the Swedish delegates under this heading included cellulose lacquers and synthetic enamels; products for use on food containers; coloured cements; paints for the retail trade; dry colours; high class varnishes. British colour makers urged that greater consideration should be given to quality rather than price, and a member of the Swedish delegation said he would represent this case as strongly as possible to the members of his association in Sweden. He also accepted an offer of a set of British Standard Specifications for pigments and would consider recommending his members to buy pigments conforming to those standards. Incidentally, a general point that emerged during the talks concerned cartels. It was emphasised that, although cartels did exist for a few chemicals, there was a big field which was not covered by cartels.

EMERGENCY REGULATIONS AND NEWS

Imports Prohibited

Chemicals Affected by Board of Trade Order

THE Board of Trade announce that they have made an Order under the Imports, Exports and Customs Powers (Defence) Act, 1939, which was passed into law on Friday last, prohibiting imports of certain goods except under licence. The object of the order is to limit with effect from September 5 imports of luxuries and of goods of which there are sufficient home supplies, in order to conserve exchange for the additional purchases of other products required in war time. The main categories of goods covered by the order include the following chemical manufactures and products:—

Citric acid, formic acid, oxalic acid, and tartaric acid.

Bleaching materials other than bleaching powder (chloride of lime).

Chloral hydrate.

Collodion.

Disinfectants, insecticides, weed-killers, fungicides, and sheep and cattle dressings, except tobacco offal.

Citrate of lime.

Nicotine and nicotine sulphate.

Salt (sodium chloride).

Sodium compounds, the following:—Carbonate, including soda crystals, soda ash and bicarbonate, caustic, cyanide, phosphate, sulphate, and silicate (water glass).

The following dyes and dyestuffs:—(a) Synthetic organic dyestuffs (including pigment dyestuffs), whether soluble or insoluble; (b) compounds, preparations and articles manufactured from any such dyestuffs, except any such compounds, preparations and articles as are not suitable for use in dyeing; and (c) organic intermediate products used in the manufacture of any such dyestuffs.

The following paints:—Painters' and printers' colours and materials, paints (including anti-corrosive and anti-fouling), painters' enamels, lacquers and varnishes, distempers, whether dry or not.

Pigments and extenders (whether dry or with oil or other medium) other than the following:—Natural dyes, silica, cadmium lithopone, luminous paints and luminous and radioactive powers of a kind used in the manufacture of luminous paints, graphite, carbon black from natural gas or acetylene.

Soap of all descriptions.

So far as acids (citric, formic, oxalic and tartaric) are concerned, no licences will be issued for their import until further notice. The same applies to the bleaching materials specified, chloral hydrate, collodion, citrate of lime, salt sodium chloride, the sodium compounds specified and soap.

Inquiries should be addressed to the Import Licensing Department, 25 Southampton Buildings, Chancery Lane, London, W.C.2.

PROHIBITION OF EXPORTS

THE following are among the goods the export of which has been prohibited under the Export of Goods (Prohibition) Order, 1939:—

Aluminium and alloys containing aluminium.

Bismuth metal.

Mercury.

Palladium, iridium, rhodium, osmium, ruthenium, osmiridium, beryllium and columbium and alloys thereof.

Silicon and alloys thereof and silicon powder.

Palm oil.

Linseed oil.

Cotton seed oil.

Whale oil.

Oil seed cake and meal.

Gums and resins: copal, shellac, seedlac and sticklac, resin.

Toluol and toluene.

Glycerine.

Radium compounds.

Changes of Address

Chemical Organisations' Preparations

ORGANISATIONS associated with the chemical industry are among the many concerns who have made special plans in view of the emergency.

The following are among the companies who have removed their transfer offices to Sunninghill Park, Ascot, Berkshire:—Beechams Pills, Ltd., Beecham Maclean Holdings, Ltd., Eno Proprietaries, Ltd., Macleans, Ltd., Phensic, Ltd., South African Druggists, Ltd., Taylors Drug Co., Ltd., Timothy Whites and Taylors, Ltd., Veno Drug Co., Ltd.

BORAX CONSOLIDATED, LTD., have transferred their secretarial department to Danes Hill, Oxshott, Surrey. The main business of the company will be carried on until further notice at the registered office: Regis House, King William Street, London, E.C.4.

VICTOR BLAGDEN AND CO., LTD., Plantation House, Mincing Lane, London, E.C.3, have made arrangements to carry on temporarily at Cecils, Chigwell, Essex, to which address all communications should be sent. Telephone: Chigwell 56.

THE BRITISH CHEMICAL AND DYESTUFFS TRADERS' ASSOCIATION, LTD., Coronation House, 4 Lloyd's Avenue, London, E.C.3, have obtained temporary alternative accommodation at "Deronne," Oxenden Wood Road, Chelsfield, Kent. Telephone: Farnborough 3152. Correspondence should be sent to this address and duplicates forwarded to the Association's London office.

LOW TEMPERATURE CARBONISATION, LTD., is transferring its activities to Derbyshire.

THE BRITISH OXYGEN CO.'S share transfer department is now at Brislington, Bristol, 4.

THE INTERNATIONAL ALUMINIUM CO. has removed to Dolgarrog, Conway, North Wales.

The address of BREEDON AND CLOUD HILL LIME WORKS, BRITISH TAR PRODUCTS, GLASS HOUGHTON and CASTLEFORD COLLIERIES, and SETTLE LIMES, transfer and secretarial departments, is c/o Breedon and Cloud Hill Lime Works, Ltd., Isley, Walton, Derby.

BRITISH BENZOL AND COAL DISTILLATION, LTD., is moving its head office to Seale House, Seale, near Farnham, Surrey. Telephone: Runfold 110.

THE UNITED MOLASSES CO., LTD., give notice that secretarial matters, accounts and share registration will be dealt with henceforward at Sefton Lodge, Leighton Buzzard, Beds. Telephone: Heath and Reach 68.

BOWATER'S PAPER MILLS, Bowater Lloyd Newfoundland, Bowater's Mersey Paper Mills, Bowaters and Lloyds Sales, Edward Lloyd Investment and Edward Lloyd give notice that their address is now 5 Elm Terrace, St. Austell, Cornwall.

In accordance with arrangements made some time ago by the Department of Scientific and Industrial Research, the BRITISH CAST IRON RESEARCH ASSOCIATION will continue to function as a scientific unit in war time, primarily for the industry with which it is concerned. Members may therefore rely on a continuation of the services normally rendered, and assistance on any problem with which they may be faced which falls within the Association's scope. As a central scientific agency for the industry, expert services are available for dealing with problems needing special experience, control methods and problems needing special investigation for their solution.

THE WOODALL-DUCKHAM VERTICAL RETORT AND OVEN CONSTRUCTION CO. (1920) LTD., announce that until further notice their address will be: Uplands, Epsom Road, Guildford. Telephone: Nos. Guildford 3267 and 3268.

HUMPHREYS & GLASGOW, LTD., announce that all business is now being transacted from Winkfield Manor, Ascot, Berks. Telephone: Winkfield Row 101

CHEMICAL DISCUSSIONS AT DUNDEE

British Association Meeting

AS briefly reported in THE CHEMICAL AGE last week, the Dundee meeting of the British Association for the Advancement of Science opened on August 30, when Sir Albert Seward delivered the presidential address. The proceedings of the various sections began on the following day, and were continued till the afternoon of September 1, when it was decided to cancel the remaining meetings owing to the international crisis. Fortunately for the chemists, the presidential address of Professor E. K. Rideal came early in the programme, being delivered on Thursday morning in the Chemistry Department of University College. Though there was general regret that their sectional dinner, scheduled for Friday evening, could not be held. Two exhibitions were arranged for the benefit of members, the one illustrating research on light metals and alloys and their industrial uses, and the other dealing with the jute industry. A lecture for juveniles had been arranged by the Chemistry Section: Dr. H. W. Melville was to speak on "New Lamps for Old," but this was among the cancelled items. Excursions and visits to the chemical laboratories of the University of St. Andrews and to the glass works of Messrs. John Moncreiff, Ltd., of Perth, planned for September 4 and 5, did not take place.

Matter of the Boundary State

Professor E. K. Rideal chose "Film Reactions as a New Approach to Biology" for the title of his presidential address to the chemistry section. Its purpose, he explained, was to re-emphasise the importance of the fundamental concepts introduced by Sir W. Hardy and Dr. I. Langmuir as to the structure of matter in the boundary state. It attempted to show that there is implicitly contained in the concept of molecular orientation a whole series of properties and events for which there are no analogies in homogeneous bulk phase systems. It was noted that many of the modes and types of the reactions which can be effected in monolayers, and which can be defined with precision and their mechanism established with a considerable degree of assurance, are unique for such interphases, but are again observed in living and organised material. It is with this object of ultimate correlation with biological behaviour that the detailed study of interfacial reactions had been taken up at Cambridge, and deep indebtedness was expressed to Professor Rideal's colleague, Dr. J. Schulman, who had been associated with him with this object.

At the outset of his address, Dr. Rideal stated that towards the end of the last century the biologist and physiologist were agreed that the biological entity was the whole living unit. This century has seen an attack on biological problems by the physical and organic chemist. The study of the living unit has been dropped and in its place we find investigations on specialised processes such as oxidation and reduction on catalytic reactions. It is an unfortunate fact, as the late Sir William Hardy clearly pointed out, that in this method of approach the mechanism of the co-ordination of the integration of the activities of an assemblage of cells must remain insoluble. It is this very point which deserves some consideration. We know for example that at death the catalysts escape from control since the molecular structure of the moving parts get disorganised. Again, Leob showed that unfertilised sea urchin's eggs could be made to develop by immersion in salt solutions of sufficient concentration. In development a whole series of complicated chemical reactions are set in operation and it is clear that in the quiescent unfertilised egg all the chemical ingredients for the reactions are present but await some change in organisation before reaction set in.

New possibilities for the jute industry were discussed at a special session held on September 1. Professor E. K. Rideal suggested lines of investigation and development of finishing. Dr. S. G. Barker, scientific adviser to the Indian Jute Mills Association, lectured on research to widen the use of jute. The chair was taken by the president of the Dundee Chamber of Commerce, Mr. D. A. Anderson, who said that over one hundred years ago, when jute was started as a commercial proposition in this area, much of the success was due to practical experiment rather than scientific investigation. To-day, however, the industry was happy to have the co-operation of science.

The Chemistry of Jute

Dealing with the chemistry of jute, Dr. Barker said that the presence of xylan was a distinct weakness in the fibre, although xylan was the sugar—perhaps the only sweet thing in the jute trade to-day! The purer the cellulose the better the spinning, and, therefore, it was essential that in the cultivation of jute they should aim at those species which gave a high cellulose content. "If we are to develop new uses for jute and new fabrics, meeting new requirements," Dr. Barker said, "we have to bear in mind that jute has a very low elasticity. Therefore we have to find some method of enhancing that elasticity, or we have to make the lack of it a virtue. There are much wider uses if we could increase the elasticity of jute, and while we have no positive results there is a great deal of work going on."

A committee of the Indian Jute Mills Association was devoting a considerable amount of attention to these fundamental issues upon which they could build something for the future. After speaking on jute research being done in India and Germany, Dr. Barker said: "I suggest to Dundee that research is necessary. I further suggest to the Dundee organisation that their professors should come forward and put one research student on to these fundamentals. I would collaborate with them in every possible way, and there would be no detriment to academic status."

Mr. D. Carter, Manchester, chief colourist to the British Dyestuffs Corporation, Ltd., said that in the past two or three years public interest in jute had grown. One of the present outlets was the manufacture of cheap carpets, rugs, and mats, for which, hitherto, the cheapest dyestuffs had been mostly used. In this, as in other fields, the public was now demanding a higher standard of fastness. This meant the use of more expensive dyestuffs. "To bring about intensive research on these problems, we must be assured of the close co-operation of the industry itself. The fact must be faced that no industry to-day can face the future with complete confidence unless it makes provision for fundamental research. A united effort in this city," Mr. Carter concluded, "would affect profoundly its future possibilities."

The New President

During the Dundee meeting, Sir Richard Gregory was elected President of the British Association for the coming year in succession to Sir Albert Seward. Sir Richard Gregory, who is 75, has been connected with the British Association for about forty years.

Among the papers which were not read owing to the curtailment of the British Association meeting were "The Catalytic Isomerisation of Paraffins," by Dr. S. F. Birch; "The Stereochemistry of Intramolecular Change," by Dr. A. K. Mills; "A General Type of Intramolecular Rearrangement," by Dr. T. S. Stevens; and a discussion on "Intramolecular Change Involving the Migration of Groups," which was to have been introduced by Professor A. McKenzie and Dr. R. Roger.

THE NEWER COSMETIC RAW MATERIALS

By
GEORGE S. COLLINGRIDGE

IMPORTANT developments in the discovery, improvement and application of raw materials have already enabled the cosmetic manufacturer to make creams and lotions suited (as they were rarely suited before) to actual dermatological requirements, and also to produce whole ranges of preparations characterised not only by enhanced stability but also improved appearance, texture and convenience in use. These newer cosmetic raw materials may conveniently be classified: Emulsifying agents, gum and glycerine substitutes, cosmetico-dermatological bases, miscellaneous cosmetic bases, foaming and wetting agents, suntan controls (i.e., sun screening agents), new face powder constituents, and preservatives and antioxidants. In some cases the application of the material only can be justified as novel, while in others the substance itself, or a special grade of it, may be of quite recent introduction or, at any rate, may still be so seldom employed by manfacturers as to make the focusing of fresh attention on it desirable.

Prominent among the newer emulsifying agents are the triethanolamine soaps, lanolin absorption bases, partially phosphated cetylstearyl alcohol, glyceryl monostearate, diglycol stearate, morpholine soaps, complex condensation products, sapamines, propylene stearate, and certain proprietary self-emulsifying waxes. Glyceryl monostearate is not a satisfactory emulsifying agent when used alone, but commercial grades usually incorporate a small proportion of soap that renders it quite satisfactory. As Redgrove has pointed out, glyceryl monostearate may also be employed in mildly acid emulsions, in which case the soap is replaced by a trace of a suitable sapamine salt. Certain of the foregoing emulsifying agents are the subject of patents, while others—notable the absorption bases—are apparently of a quite simple character, yet vary considerably in quality according to their source of origin.

Schools of Thought

Cosmetic literature has, during the past few years, been replete with dermatological references and theories—ranging from the "biological skin constituents" theory developed by Shepherd and Pacini from the work of Unna, Golodetz, etc., to the "acid skin" contention of Schade and Marchionini, which has since been subjected to various modifications at the hands of Gattefossé, Lewinson, Winter and Kopaczewki. It will, however, suffice for me to mention that one school of thought favours the use of lanolin absorption bases, cholesterin, lecithin and the essential fatty unsaturates known (incorrectly) as "vitamin F," while the other, led by Gattefossé in France and Sedgwick in this country, appears to consider that the most biologically effective face creams and lotions are those of the oil-in-water type, such as the thin triethanolamine stearate creams known to the trade as "beauty milks." Nevertheless, the value of absorption bases, which normally form water-in-oil emulsions, is not disputed for skin lubricating and other purposes, while the utility of cholesterin and lecithin has also been consistently upheld in practice. The following notes are intended to cover the most important of the modern emulsifying agents, including the two main groups above-mentioned.

For creams of the w/o type, lanolin was formerly the most widely used emulsifier, owing to its property of absorbing and retaining considerable quantities of water. It suffered, however, from the disadvantage of giving an unduly sticky cream, characterised by a tendency to exhibit surface discoloration and a more or less pronounced animal odour. Replacing it, therefore. in up-to-date manufacturing procedure are the more highly specialised lanolin absorption bases, which consist essentially of lanolin derivatives such as the cholesterols, cetyl and carnaubyl alcohols, etc., admixed with white or yellow petroleum jelly or mineral oil and paraffin wax. Proprietary bases of this type are also apt to contain small amounts of additional emulsifying and stabilising agents. Another type of absorption base is that which contains no hydrocarbons whatever, but only supplementary fats and waxes of animal or vegetable origin, selected because of their closer relationship to the skin secretions and general dermatological superiority. It is probably this latter type which will eventually find maximum favour in high-class cosmetic and pharmaceutical emulsions.

Lanolin Absorption Bases

Lanolin absorption bases have been chiefly suggested for use in the manufacture of "skinfoods." tissue creams, night creams, lubricating and cleansing creams, but they can also be employed to advantage in lipsticks, salves, cuticle creams, liquid creams, complexion milks, and mildly acidic creams of the fruit juice type. Their water absorption properties are considerably superior to those of the parent wool fat, while as superfatting agents they have all the desirable characteristics of lanolin without the latter's unpleasantly accentuated stickiness. The following basic formula for a night cream may serve to illustrate the use of absorption bases in cosmetic emulsions:

	Per cent.
Cetyl alcohol	0.5
Mineral oil, viscous	4.0
Cholesterin, technically pure	0.2
Glycerine	4.5
Sperm oil, refined	3.0
Citric acid, or calcium glycerophosphate	0.3
Beeswax, sun-bleached	3.0
Lanolin absorption base	22.0
Water	62.5

Absorption base creams should be made at the lowest possible temperature above room temperature, consistent with retaining the various fats and waxes in a fluid and workable state. Water is stirred slowly in, and the fatty mass allowed to absorb it gradually before more is added. The finished cream should then be passed (but not at too high a pressure) through a colloid mill or homogeniser.

I have devoted considerable space to the absorption base because of its intrinsic importance. Another main group is that which includes triethanolamine stearate and oleate, diglycol stearate and commercial glyceryl monostearate. Of the triethanolamine soaps, the stearate is by far the most commonly employed in cosmetics. It is preferably formed *in situ* by the combination of approximately 2.2 grams of triple-pressed stearic acid to every one gram of commercial triethanolamine. Workers such as Lewinson, Deakers and Cerbelaud have recommended the inclusion of a considerable excess of stearic acid—Deakers because he considers this an aid to the stability of the resulting emulsion and the Continental chemists because they believe an excess of stearic acid to be a safeguard against the cream or lotion turning brown (the neutral salt becomes brown and causes discoloration). Glycerine has also been blamed for discoloration, Lewinson referring to the discovery that "triethanolamine creams discolour more rapidly in the presence of glycerine."

Triethanolamine Creams

Personal observation has, however, led me to believe that, provided a good grade of stearic acid is employed, there is no necessity to include in triethanolamine formulæ any considerable excess of stearic acid—in fact a slight excess only is to be preferred, particularly in liquid creams, where too much tends to destroy the balance of solid and liquid constituents, thus rendering the emulsion unstable. The shrinkage of triethanolamine creams that frequently occurs when they are filled into jars may to a great extent be overcome by the inclusion of small amounts of mucilaginous substances, such as tragacanth, quince seed or sodium alginate solutions

in the aqueous phase of the emulsion. Diethylene glycol and its ethyl ether (carbitol) may be used to replace glycerine—as in the following formula for a vanishing cream devised by W. H. Dicken, M.Sc. :—

	Parts
Stearic acid	50.0
Cetyl alcohol	2.0
Triethanolamine	2.5
Diethylene glycol ethyl ether	5.5
Water	140.0

In the preparation of triethanolamine stearate complexion milks the inclusion of about 0.1 per cent. glyceryl monostearate has been proved to exert a marked stabilising effect. Commercial glyceryl monostearate is by itself an excellent emulsifying agent, containing as it does the requisite small proportion of soap to render it completely satisfactory. In practice, it has a good deal in common with diglycol stearate—a hard, almost white synthetic wax (m.p. 54-55° C.), which disperses in hot water to form a cream on cooling. Both emulsifying agents are capable of giving non-discolouring, non-greasy creams that impart a pleasantly smooth sensation to the skin.

Cetyl and Stearyl Alcohols

Cetyl alcohol, $C_{15}H_{31}OH$, and stearyl alcohol, $C_{18}H_{37}OH$, are now being increasingly used in cosmetic manufacture, because of their emollient but non-greasy character and the fact that they give emulsions of marked stability and excellent texture. They are soluble in oil but contain an hydroxyl group and have therefore an affinity for water. Cetyl, stearyl and myristyl alcohols have been shown by Jencic and others to exhibit a marked improvement in the water-absorbing properties of water-in-oil emulsions of the absorption base and related types. On the other hand, the proprietary emulsifying agents that consist of partially sulphonated or phosphated cetylstearyl alcohol mixtures give oil-in-water emulsions.

The now standardised emulsifier of this type is said to be a partially phosphated (about 10 per cent.) cetyl-stearyl alcohol. When first introduced some years ago it was partially sulphated but later detailed experiments proved that the phosphated variety was considerably superior for most purposes. It is a whitish wax of melting point approximately 50° C., neutral and, like the parent alcohols from which it is made, entirely free from fatty acids, fats and other impurities.

The emulsions formed with it are neutral in character and in many ways exhibit potentialities that soap-emulsified creams inherently lack—e.g., they can be adjusted to be perfectly stable to a reasonable *p*H on the acid side, as well as the alkaline. This means that such an emulsifying agent can be used to produce a mildly acidic face cream, as recommended by the Schade-Marchionini school of thought. A typical formula is as follows :—

	Parts
Fatty alcohol emulsifier	10.0
Stearyl alcohol	4.5
Glycerine	6.0
Citric acid	0.2
Lemon oil	0.5
Water	78.8

Schou's oil, known also as Palsgaard Emulsion Oil, is extensively used in the manufacture of margarine but—strangely enough—has not yet found any widespread application in cosmetics. It is actually an oxygenation product made by oxidising soya bean oil to gelatinising point and combining this with double its own weight of untreated oil. According to Frank Atkins, about 0.5 per cent. of this is found to facilitate the incorporation of milk in margarine. I believe that there is a future for Schou's oil in cosmetic manufacture, as an emulsifying agent of the water-in-oil type. I have myself made some very satisfactory cosmetic emulsions with it, although it is by no means as easy to manipulate as the majority of cosmetic emulsifiers. A hair cream, for example, may be prepared from 40 to 50 per cent. mineral or groundnut oil, with three per cent. Schou's oil, and the balance water, perfume, etc.

There is a diversity of opinion on the utility of morpholine compounds in cosmetics, Mahler and others opining that they "notoriously irritate the skin." The sapamines, propylene stearate, albumol and the lamepons (the latter being condensation products of high molecular albumens with higher fatty acids) have not yet found sufficiently widespread application in cosmetics to be referred to in detail here.

The search after satisfactory glycerine substitutes goes on. Those of most interest to cosmetic manufacturers are ethylene glycol, diethylene glycol, diethylene glycol, ethyl ether, sorbitol and mannitol syrups. A commercial sorbitol syrup, as used in this connection, contains 15.7 per cent. water, 0.82 per cent. sodium sulphate and 0.61 per cent. glucose, in addition, of course, to its sorbitol content. It is a thick, viscous pale straw coloured product—completely soluble in water and soluble also in ethyl alcohol. It has the advantage of absorbing less moisture than glycerine in moist atmospheres and holding moisture better in dry atmospheres; in other words, its hygroscopicity is considerably less variable than that of glycerine.

Mannitol, as used in Germany, is derived by extraction from manna, *fraxinus ornus*. Ethylene glycol and diethylene glycol are hygroscopic, colourless, odourless, viscous liquids, miscible with water—and therefore well adapted to replace glycerine in almost any cosmetic formulæ. Perhaps the chief objection to carbitol from the perfumery point of view is its ethereal odour; on the other hand, its pleasant effect on the skin, slight hygroscopic properties, and excellent solvent powers for perfume, etc., are all in its favour. Diethylene glycol is more viscous and considerably more hygroscopic than carbitol; its lack of odour is a further recommendation.

Variations in the price and quality of natural gums have always presented a difficult problem for the works chemist who wishes to keep his products standardised. Many attempts have therefore been made to find a satisfactory substitute, but with little success until the summer of 1937, when sodium alginate was introduced under the name of manucol.

Marketed in various grades, in the form of a fine white powder, sodium alginate has already become widely known and used throughout the cosmetic industry. Mucilages made from it are transparent, water-white, odourless, stable and uniform. Moreover, by the addition of calcium citrate, mucilages of very low concentration may be prepared, having any desired viscosity and consistency. Sodium alginate gels and mucilages may be used in the manufacture of hand jellies, hair creams, tooth pastes and denture fixatives, hair-setting lotions, etc.

Another comparative newcomer to the cosmetic chemist's shelves is Californian citrus pectin—while still more recently there has been a certain amount of interest apparent in connection with the use of carob or locust bean gum.

New Cellulose Derivatives

Quite different in character, though to some extent similar in application, are the new cellulose derivatives such as the German tylose and the English P.M.B. 333. These produce interesting gels with water, which have the advantages of being uniform, non-fermenting, non-rancidifying, non-toxic, neutral, stable and resistant to alkalies and dilute acids. They possess marked dispersing and emulsifying properties, and have been suggested for use in face creams, face packs, shaving creams, tooth pastes, depilatories, etc. In my opinion, they are not so suitable for hair creams or setting lotions, owing to the film that they leave behind as a residue.

Of a somewhat different character, but increasingly important in cosmetic manufacture is that extremely variable product known as bentonite. Out of many grades now on the market, probably only one or two at the most are really suitable for cosmetic work, owing to a tendency for gritty particles to be present. However, a cosmetic grade bentonite, free from grit and able to adsorb seven or eight times its own weight of water, is a material with many latent possibilities. One such grade of bentonite takes up water avidly and swells into smooth gelatinous pastes, gels or thick creams, depending upon the amount of water added. Thus one part mixed with seven parts of water gives a resulting product that resembles petroleum jelly in texture and appearance. It is

noteworthy that no other mineral matter will form such thick gels with so small a proportion of solids to water. In thin dilutions, such as one part to 20 of water, it remains suspended indefinitely.

According to Shepherd, Pacini and others, the normal healthy skin contains one part of cholesterin and one of lecithin to three parts of total unsaturated fatty acids. Cholesterin, both in the pure crystallised form and as a constituent of lanolin and wool wax, has already found considerable application in cosmetic manufacture—the crystallised form being chiefly utilised as a constituent of hair lotions. Egg lecithin and plant lecithin have also been employed, the former being preferred by the Viennese authority, Dr. Fred Winter, although the vegetable product is mostly used in actual practice. As to the unsaturated fatty acids, these have been widely advertised in the trade press as the so-called Vitamin F concentrate, but are also utilised by manufacturers in the form of lard, linseed oil fatty acids, etc.

Another important biological material for use in cosmetics is an oil-solution of carotene. This is now used in a well-known Anglo-American face cream and also (in higher proportions) in eye packs and astringent creams intended for application in beauty parlours. Provitamin A has been held by Gattefossé and co-workers in France to exert a definitely beneficial action on dry and wrinkled skins; it has, of course, been proved by the medical profession generally to be of considerable utility in the treatment of burns and wounds. Unfortunately, it stains too readily for everyday application in effective concentrations.

Other raw materials of cosmetic interest include the hydrogenated oils, distilled fatty acids, decolorised olive oil and purified castor oil. The hydrogenated oils are obtainable in a wide range and are characterised by properties that definitely recommend them for use in lipsticks and many types of face cream, to replace oils and waxes. The distilled fatty acids are extremely useful, in that they can be conveniently employed in the manufacture of shampoos, etc., e.g., with triethanol amine. No account of this kind would be complete without a reference to the various proprietary sun-screening agents which are nowadays included in better-class suntan creams and lotions, in order to permit the passage of those rays of the sun that are beneficial, but to absorb most of the light having a wave-length of 2,900 to 3,200 Angstrom Units—the band to which the powerful blistering effect of sunlight is due.

New bases for face powder include specially graded, standardised chalks of a highly absorbent character; "micronised" talc that exhibits unusual bulking properties, owing to its high state of division; waterproof chalk and waterproof magnesium carbonate. Incidentally, many perfumes are rendered flat and musty when incorporated in face powders and talcum powders—but this tendency can be overcome by using perfumes with a marked "lift," such as cyclopentadecanolide (exaltolide) and radionde lambda.

In conclusion, I would refer to the utility of butyl stearate as a plasticiser in nail enamels, solvent for esoin in lipsticks and modifier of texture in vanishing creams; also sodium hexametaphosphate, a lime soap dispersing agent when used in bath salts; sodium pentaborate—a diluent in soapless shampoos; and, of course, that txtremely interesting, non-toxic antiseptic, tea tree oil.

YOUNG SCIENTISTS AND NATIONAL SERVICE

THE chemical committees associated with University Recruiting Boards have been set up at various centres to deal with offers of service from men under 25 with certain qualifications in engineering, chemistry, metallurgy, physics, the biological sciences and mathematics (including statistics).

Such men should apply at any local office of the Ministry of Labour for the requisite form. The forms will be referred to the technical committees and the University Recruiting Boards, which will ensure that men possessing these qualifications are allocated to the forms of national service in which they will be most useful.

Dehydration of Pigment Pastes

A New Method

A NEW method for the dehydration of pigment pastes is described by Scheirholtz (*Can. Chem. Met. Eng.*, 1939, *23*, 8,401-404).

Dehydration of pastes by mere drying by heat is by no means a satisfactory method, since it causes agglomeration of the product which then requires much grinding to reduce it to the same fineness as it had before drying.

It was found that, in the case of iron blue, the charge of the individual particles in water was negative. being dispersed by trivalent anions such as phosphate, and coagulated by trivalent cations such as aluminium. It was thought that the most desirable method of dehydration would involve direct transfer of the blue from the aqueous phase to one of a fairly high boiling petroleum ether, and for this purpose dibutyl citrate and phosphate were found efficient agents to effect the transfer. However, when distilling off the petroleum, deposition of the suspended blue occurred on all the surfaces with which it came in contact.

The aqueous blue-petroleum mixture was therefore put through an emulsifier, which effectively formed a water in-oil emulsion with the blue in the material phase. This relatively concentrated emulsion was then dropped into hot petroleum maintained at about 80-90° C. under a vacuum of 50 mm. The water evaporated immediately so that each droplet of suspended blue dehydrated as a unit, and aggregation occurred only to the extent of the number of articles of blue in the individual droplets. Since this number will be less, the more dilute the aqueous pigment pastt is before emulsification, the advanage of having the paste as dilute as possible is obvious. It was found that the introduction of emulsion into the hot petroleum could proceed satisfactorily until the concentration of pigment in the petrol reached 10 per cent. The pigment settled to the bottom of the petro-per cent. The pigment settled to the bottom of the decan-tation, the rest was either driven off by vacuum distillation or the pigment-petrol mixture was incorporated directly into plants. The dry product had a good colour, and after very light milling showed no large particles under the microscope. It had a water absorption after exposure to a humid atmosphere, of only three per cent., as against nine per cent. with a typical direct dried pigment.

By-Product Sulphuric Acid

Output at U.S. Copper and Zinc Plants

THE output of by-product sulphuric acid at copper and zinc plants in the United States in 1938, in terms of 60° Baume acid, amounted to 687,176 short tons, of which 220,297 tons were produced at copper plants and 466,879 tons at zinc plants, according to the Bureau of Mines, United States Department of the Interior.

The acid reported is only that produced from the sulphur content of the sulphide ores. The figures are exclusive of acid made from pyrites concentrates in Montana and Tennessee. Some acid recovered as a by-product in the roasting of high sulphide gold and silver concentrates is included in the tonnages for copper plants for 1938 and 1937, and is included in this manner in order to avoid the disclosing of confidential information. In addition to the quantities given above, 30,996 tons of sulphuric acid were made at zinc plants from 8,248 tons of sulphur, indicating a very large decline in the use of sulphur for increasing the recovery of acid at zinc plants. No sulphur was used at copper plants.

In 1937, 833,994 tons of by-product sulphuric acid were produced. Of this amount 291,638 tons were recovered at copper plants and 542,356 tons at zinc plants. In addition, sulphur amounting to 40,044 tons was used at zinc plants for the recovery of 151,090 tons of sulphuric acid.

AMERICAN PHOSPHATE ROCK

Increase in Quantity Mined—Decline in Exports Reported

AN increase of three per cent. in the quantity of phosphate rock mined in the United States, but a decline of six per cent. in the quantity shipped is reported for the half year ended June 30. The total quantity of phosphate rock sold or used in the United States, as compiled from reports by producing companies to the Bureau of Mines, was 1,750,114 long tons compared with 1,860,787 tons shipped during the similar period in 1938. Stocks in producers' hands increased. Over a million and a half tons were held in Florida on June 30, 1939.

The apparent domestic consumption of phosphate rock in the first six months of 1939 was slightly less (2 per cent.) than that of the similar 1938 period. Exports, however, decreased 13 per cent.

In the first six months of 1939 phosphate rock was mined in Florida, Tennessee, Idaho, and Montana, and apatite in Virginia. Florida was by far the largest shipper, but shipments were less than in the first half of 1938, because of decreases in both land-pebble and soft rock shipments of 10 and 18 per cent. respectively. Most of the companies in the land-pebble field reported decreased shipments, some as much as 30 per cent. from the corresponding period in 1938.

Fertiliser consumption in the United States for the 1938-39 fiscal year has been estimated by the National Fertiliser Association at approximately 7,554,000 tons. This is based on tax tag sales in 17 States which account for about 71 per cent. of the total tonnage, and estimates for the remaining States. As compared with the preceding fiscal year, there was an increase of 0.2 per cent.

Imports of phosphate rock into the United States in the first six months of 1939 were limited to 3,500 long tons of the low fluorine content phosphate rock from Curacao (Netherlands West Indies), five times as much as was imported from that island in the whole calendar year 1938 (701 tons). No imports of apatite into the United States were reported during the January-June, 1939, period.

Total exports for the first half year of 1939, as reported by the Bureau of Foreign and Domestic Commerce, were nearly eighty thousand tons less than in the corresponding period in 1938, but still were running at a rate of slightly over a million tons a year. This decline of 13 per cent. in total exports was due to a decrease of 81,556 tons in Florida land-pebble exports from the quantity shipped in the first six months of 1938. Shipments of high-grade hard rock from the United States in the January-June, 1939, period were about 3,000 tons greater than in the first half of 1938. but were far below the amount necessary to counterbalance the decline in the land-pebble exports.

Travelling Showroom Vans

IT is sometimes said that British firms are slow and conservative as regards their selling methods, especially on the export side. Some firms may consider that to have catalogues and other sales aids printed in the client's language and to send samples where necessary is to be sufficiently progressive, but many firms consider that this is insufficient.

The methods adopted by one London company, the Rawlplug Co., Ltd., show wide imagination and are an example of the best progressive methods. With their many years and extensive experience of export business the company has, since several years back, come to the conclusion that to attain increased business in the foreign markets it is necessary for the buyers not only to see a competitive range of the manufacturer's products, but also to test and try them out on the spot. The Rawlplug Company have, therefore, a fleet of demonstration and showroom vans travelling all over the world.

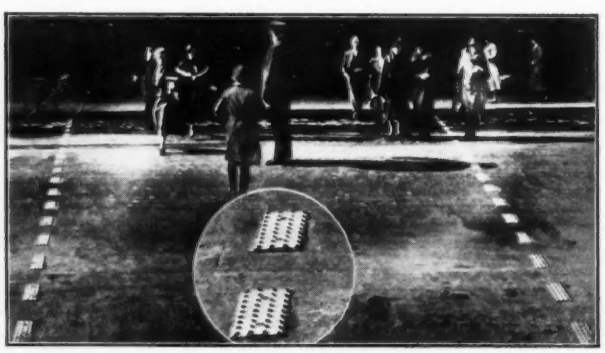
The driver is an experienced engineer who is capable of solving technical problems and showing interested parties the various uses and applications of the company's fixing devices and products. By such an arrangement the most remote districts in any country can be reached. Experience has proved that it is well worth the trouble and expense. Occasions are few where orders are not given on the spot, but the main business with subsequent repeat orders follow in an encouraging way after practically every visit.

We illustrate some views from the showroom van's tour in Australia. The van-demonstrator and salesman accomplishes his job in many cases under very trying conditions—sometimes the temperature is over 105° F. and sometimes below freezing point. But notwithstanding weather conditions, bad roads and other obstacles, the tours were in every case successful from a business point of view.

It is interesting to note from the illustrations that Rawlbolts are used, among other applications, for fixing road studs in Australia. Due to the considerable saving in time and labour—not to mention neatness and strength—the Rawlplug method may soon be universally adopted in countries where there is heavy and congested motor traffic.

The showvan, after having finished the itinerary in Europe and South Africa is still going strong in Australia, and after completion there, will probably go to South America where, the company are convinced, there is a great field for British products.

Tenterfield—North coast of New South Wales, 475 miles from Sydney and 176 from Brisbane.



Thousands of Rawlbolts are used for fixing road studs throughout Sydney, Australia.

"Jack" Wrench

Tribute from Mr. A. A. Milne

Mr. A. A. Milne, the well-known playwright and author, has sent us the following appreciation of the late Mr. H. J. Wrench, who was for nineteen years on the staff of THE CHEMICAL AGE.

In 1916 Wrench was one of my signallers in the 4th Battalion of the Royal Warwickshire Regiment, then stationed in the Isle of Wight. To me, whose business it was to instruct him in the Morse Code and the induced currents of a telephone, he was just a pleasant happy-go-lucky fellow, whose inability to deal with such strange material did not in the least impair the cheerful friendliness with which he accepted correction. I don't think that any officer could have helped liking him, but I had a fellow-feeling for him which the regular soldier would not have had. The army so obviously meant nothing to either of us; we were so clearly thinking of something else at the time. But I did not know what it was he was thinking about (when he should have been listening to me) until he suddenly appeared on the stage at a Battalion Concert.

There were by this time half-a-dozen of "the profession" in the Battalion, but Wrench, whom I had supposed to be an amateur, was the discovery of the evening: a genuine "comic." I was so delighted at the discovery that I wrote a dialogue for him and one of his signalling friends in readiness for the next concert. Unfortunately the war had to go on, and I was in France before there was opportunity to hear them at it; but many years afterwards, when I met Wrench again, the manuscript, all tattered and torn, was still in his possession. He had just joined Benn Brothers, but, always hankering to get back to the stage, was wondering if I could give him any sort of introduction. I did what I could; in vain; and in a little while he had settled down happily, the Dramatic Circle giving him that outlet for his imagination which was so necessary for him.

I knew nothing of him as a business man, but I think that, but for the war, he might have risen to be a considerable comedian. But then "but for the war" I should never have had the fun of knowing him, and of remembering clearly, twenty-three years after, the cheerful, friendly, ingenuous youth who tried so hopefully to be a signaller.

A. A. MILNE.

Fertilisers for Wheat

After-Effect of their Addition

A DETAILED study has been made by B. N. and J. R. Singh (*Proc. Ind. Acad. Sci.*, 1939, *10*, 27-40) to elucidate the after-effects of the addition of certain fertilisers, e.g., ammonium sulphate, ammonium phosphate, potassium sulphate, superphosphate and potash mixture, on the growth and water requirement of wheat. It was found that treated plants in general exhibit decided improvement in their growth than the untreated ones. While the height, tiller number and total dry matter accumulation per plant are significantly better in all the fertilised series than the unmanured ones, potassium sulphate and superphosphate applied alone do not show significantly higher increase in the yield of grain and straw as also of the length of earhead or the absolute weight of the grains.

The general effect of the fertilisers is to cut short the water requirement of the treated plants to values much below that obtained for the control ones, although with superphosphate and potash mixture the differences are not statistically very significant. The total amount of water necessary for raising a successful crop of wheat is therefore less in certain cases, e.g., potash sulphate and superphosphate, while in other series it increases beyond the values recorded for control apparently due to the very high yield of grain obtained in these cases. Thus, the application of fertilisers besides showing the higher yield of the crop has the added advantage of minimising the cost of irrigation.

Control of Molasses and Industrial Alcohol

Defence Regulations Order

IN pursuance of an Order made under the Defence Regulations, the Minister of Supply has undertaken the control of supplies and prices of molasses and industrial alcohol, and of substances which are normally produced from molasses or industrial alcohol, including acetone, acetic acid, butyl alcohol, amyl acetate, butyl acetate, ethyl acetate and fusel oil. Such control will be exercised by a Department of the Ministry entitled the Molasses and Industrial Alcohol Control.

The first of these orders directs that returns shall be made of stocks of molasses, industrial alcohol, acetone, acetic acid, butyl alcohol, amyl acetate, butyl acetate, ethyl acetate and fusel oil and that such further information shall be furnished as may be required in regard to such materials or to the business of the holder thereof. Returns are to be made on forms which are being sent to the firms concerned.

As soon as is possible, hereafter, the use of and dealings in molasses, industrial alcohol and the further materials referred to above will be permitted only subject to such conditions, e.g., as to specified maximum prices, permits to deal, etc., as will be specified in an order or orders to be issued by the Ministry of Supply, a further notice in regard to which will be issued.

Attention is also drawn to the fact that export of molasses, acetone, butyl alcohol and ethyl alcohol is being prohibited except under licence from the Export Licensing Department of the Board of Trade.

Any communication in connection with the control of molasses and industrial alcohol should be addressed to the Molasses and Industrial Alcohol Control, Ministry of Supply, Great Burgh, Epsom, Surrey.

A number of similar orders have been made in connection with the control of non-ferrous metals (copper, lead and zinc), aluminium, silk, rayon, and paper.

The following have been appointed to act as controllers:—

CAPTAIN O. LYTTELTON (non-ferrous metals).
THE HON. G. CUNLIFFE (aluminium).
MR. E. W. GOODALE (silk and rayon).
MR. A. RALPH REED (paper).
MR. N. GARROD THOMAS (sulphuric acid).
MR. F. C. O. SPEYER (sulphate of ammonia).
MR. HOWARD CUNNINGHAM (other fertilisers).
MR. A. V. BOARD (alcohol, molasses and solvents).

Prices of Oils and Fats

Wholesalers to be Licensed

ORDERS have been made under the Defence Regulations prescribing that the prices at which oilseeds, vegetable oils and fats, marine oils, and animal oils and fats specified in the Orders, and margarine and manufactured cooking fats, are sold must not exceed the average prices current during the seven days preceding the date of the Orders.

On and after September 25 persons selling these oilseeds, oils, and fats by wholesale must be licensed, and this will also apply to manufacturers or processors of the oilseeds, oils, and fats. Returns must be made forthwith of all stocks of more than 100 tons of the oilseeds, vegetable oils and fats, and marine oils, or of more than 50 tons of the animal oils and fats covered by the Orders, or of more than five tons of margarine or manufactured cooking fats.

Applications for licences and stock return forms should be made to the Food (Defence Plan) Department, Oils and Fats Branch, Great Westminster House, London, S.W.1.

PERSONAL NOTES

LORD GLAMIS has joined the Board of the United Kingdom Provident Institution to fill the place vacated by Lord Lothian on his appointment as Ambassador to the United States.

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MR. JOHN BOAG, assistant chemist with Paton and Baldwins, Ltd., woollen manufacturers, Alloa, has been appointed chief chemist at Launceston Works, Tasmania, after 13 years at Alloa.

MR. GEORGE SADLER, superintendent with the Scottish Oils and Shell-Mex Co., Ltd., Lairg, Sutherland, was married on September 2 to Miss Mary Cruickshank of Aberdeen.

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MESSRS. SIDNEY VAN DEN BERGH, ARTHUR HARTOG, P. D. H. HENDRIKS, HENRY JURGENS, RUDOLF JURGENS, HEINRICH SCHICHT and FRANZ SCHICHT have resigned from the board of Lever Brothers and Unilever, Ltd., and DR. R. J. H. PATIJN has resigned from his advisory directorship of the company.

Viscount Leverhulme (left), Mr. F. D'Arcy Cooper and Mr. A. Van den Bergh (right), who are concerned in changes which have been made in the boards of Lever Brothers and Unilever, Limited, and Lever Brothers and Unilever, N.V.

MR. T. K. PRENTICE has been elected president of the Associated Scientific and Technical Societies of South Africa. Other office-bearers are: vice-presidents, Messrs. J. White and R. J. B. Kethel; hon. treasurer, Mr. F. K. Webber.

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DR. JOSEPH WARD, J.P., chairman of Thos. W. Ward, Ltd., on whom Sheffield University recently conferred the degree of LL.D., has presented to the directors of the company a painting of himself. Dr. Ward has been a member of the Applied Science Committee of Sheffield University for 15 years.

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MR. E. H. A. JOSEPH was elected president of the Chemical, Metallurgical and Mining Society of South Africa at the recent annual meeting of the Society. DR. J. H. DOBSON, MR. T. C. A. MEYER and MR. J. V. MULLER were elected vice-presidents, and DR. P. N. LATEGAN, hon. treasurer, Messrs. L. BOK, A. CLEMES, T. COULTER, J. M. DIXON, PROFESSOR C. W. BICCARD JEPPE, DR. J. T. MCINTYRE, PROFESSOR B. F. J. SCHONLAND, PROFESSOR F. J. TROMP and DR. J. C. VOGEL were appointed members of Council.

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DR. ROBERT STUART TIPSON and DR. WARNER CARLSON have been appointed Fellows in the Department of Research in Pure Chemistry at the Mellon Institute, U.S.A. Dr. Tipson was born in Derbyshire, England, and graduated at Birmingham University. He engaged in research on the carbohydrates under Professor W. N. Haworth, F.R.S., being given a Priestley research scholarship in 1927-8, and a University of Birmingham teaching scholarship in 1928-9. At this time he also conducted an investigation, for the British Empire Cancer Campaign, on the preparation of tobacco tar and determination of its constituents. In 1932 he gained the degree of Ph.D., with a thesis "Studies in the Carbohydrate Group." In 1929 Dr. Tipson was appointed to a research fellowship in the department of industrial and cellulose chemistry, McGill University, Montreal.

Arrangements are being made for the following to cease to be directors of the Dutch company, Lever Brothers and Unilever, N.V.: Messrs. C. W. BARNISH, ALBERT VAN DEN BERGH, JAMES P. VAN DEN BERGH, C. H. CLARKE, F. D'ARCY COOPER, CLEMENT DAVIES, HERBERT DAVIS, J. L. FERGUSON, H. R. GREENHALGH, GEOFFREY HEYWORTH, J. L. HEYWORTH, VISCOUNT LEVERHULME, J. L. POLAK, PAUL RYKENS, GEORG SCHICHT, HEINRICH SCHICHT, FRANZ SCHICHT, J. L. SIMPSON and C. E. TATLOW.

This eliminates all interlocking directorships between the two companies.

Arrangements have been made for some new directors of Dutch nationality to be appointed to the Dutch company.

Arrangements are also being made for Messrs. H. BALLANTYNE, L. H. HARTLAND-SWANN, J. W. PEARSON and the MARQUESS OF CARISBROOKE to cease to be advisory directors.

OBITUARY

MR. ADAM PROCTOR ATKINSON, who retired from the position of managing director of Eucryl, Ltd., early this year, has died.

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MR. G. E. GILMAN, the Secretary of Benn Brothers, Limited, the proprietors of THE CHEMICAL AGE, whose death we briefly recorded in our last issue, had been unwell and away from the office for some months. Mr. Gilman was invalided out of the army with severe war wounds and joined Benn Brothers' office with severe war wounds and joined Benn Brothers' counting house in 1916. His energy and ability marked him out for promotion, and in 1929 he was appointed sales manager of Ernest Benn, Ltd., the book publishing company.

A year later, during a rush period he continued at work against doctor's orders and a resulting recurrence of trouble from his war wounds led to the amputation of a leg. His tremendous courage helped a remarkable recovery, and in April, 1934, Mr. Gilman was appointed Secretary of the parent company. He had a fine head for figures and never spared himself in his duties. He was greatly beloved by the staff in Bouverie House where his passing is deeply lamented.

General News——From Week to Week

MAY AND BAKER, LTD., have been illustrating the remarkable developments which have recently taken place in the perfection of fluorescent materials in a special exhibition in the Rhodoid Department at 42 St. Paul's Churchyard, E.C.4.

COSMETICS and drugs sold in Canada are to be subject to continuous analysis by a chemist recently engaged by the food and drug laboratory of the Department of National Health. Mr. J. L. Thomson, a graduate chemist, with training in bacteriology, has been appointed to the post.

BAIRDS AND SCOTTISH STEEL, LTD., are to spend more than £300,000 on the reconstruction of the works connected with the part of the combine formerly known as the Scottish Iron and Steel Co. Bairds, in addition, are planning a big expenditure on coke-oven plants for Gartsherrie furnaces. The surplus gas at the coke ovens will be fed into the iron and steel works as fuel in a way similar to the procedure adopted by Colvilles, Ltd., at Clyde Iron Works and at Clydebridge steel works.

THE NATIONAL COMMISSION of Producer-Gas and Producer-Gas Courses in the Ministry of Agriculture has been created in Brazil. It will promote the use of petrol in agricultural tractors, lorries, and fixed installations; increase the manufacture of producer-gas; promote the replanting of forests; encourage the production and distribution of fuel suitable for producer-gas; promote the use of the most economical methods for producing wood fuel with utilisation of by-products; and organise propaganda in producing centres relative to the utility of building roads or highways with standard gradients, for permitting easy traffic of producer-gas-driven vehicles.

PETERBOROUGH GAS COMPANY are shortly commencing the installation at their chief works in New Road, Peterborough, of a new continuous vertical retort, capable of dealing with 133 tons of coal a day.

A NEW FACTORY which is being completed at Flixborough, Scunthorpe, for Nitrogen Fertilisers, Ltd., will, when in operation, utilise gas from a neighbouring steelworks for the manufacture of fertilisers. The gas will afterwards be returned to the steelworks for use in the blast furnaces.

SINCE THE MOVEMENT of Japanese capital into Manchukuo is being encouraged by both the Tokyo and Hsinking governments, promotion of the chemical industry has been extremely active. The aluminium industry in Manchukuo has expanded on a large scale, while various electrochemical enterprises have been organised to produce synthetic rubber, calcium carbide, and acetic acid. Pulp and soya bean industries are already established, and construction of coal-liquefaction plants is being discussed.

THE AKTIEBOLAGET KAMYR of Karlstad, Sweden, which is a joint company formed by the A.-B. Karlstads Mek. Verkstad (of Karlstad, Sweden), the A.-S. Myrens Verksted (of Oslo, Norway), and the Karhola O.-Y. (of Karhula, Finland), has undertaken to erect a trial plant with a capacity of eight to ten tons a day to try out a new method of continuous cooking of sulphate cellulose. According to an arrangement made with the district government, the plant must be ready for operation this month.

Inventions in the Chemical Industry

The following information is prepared from the Official Patents Journal. Printed copies of Specifications accepted may be obtained from the Patent Office, 25 Southampton Buildings, London, W.C.2, at 1s. each. The numbers given under "Applications for Patents" are for reference in all correspondence up to the acceptance of the Complete Specification.

Applications for Patents

ACYLATED INDENES, ETC.—Armour and Co. (United States, Sept. 2, '38.) 24064.

PREPARATION OF LIGHTER HYDROCARBONS from coal.—B. Blakemore. 23802.

RESINOUS COMPOSITIONS.—British Thomson-Houston Co., Ltd. (United States, Aug. 23, '38.) 24183.

CEMENTS, ETC.—Cement Marketing Co., Ltd., and H. Keeble. 23926.

NON-RESONANT SURFACE.—Cement Marketing Co., Ltd., and H. Keeble. 23927.

COMMINUTION OF MOLTEN METALLIC SUBSTANCES.—G. J. Comstock. 23900.

PAINTS, ETC.—County Chemical Co., Ltd., and L. G. Hambreks. 24223.

PRODUCTION OF PROTECTIVE COATINGS on magnesium, etc.—Dow Chemical Co. (United States, Nov. 14, '38.) 24062.

PRODUCTION OF VALUABLE ORGANIC ACIDS.—E. I. du Pont de Nemours and Co. (United States, Aug. 17, '38.) 23775.

CORROSION-RESISTANT APPARATUS.—E. I. du Pont de Nemours and Co. (United States, Aug. 26, '38.) 24369.

DIVOLATILISATION OF CHARCOAL.—E. I. du Pont de Nemours and Co., H. E. Klein, and W. S. McNay. 23923.

COLOURATION OF TEXTILES, ETC.—G. H. Ellis and H. C. Olpin. 23726.

PRODUCTION OF FERRO-ALLOYS, ETC.—G. Hörgard. (Norway, Aug. 22, '38.) (Norway, July 8.) 23887.

MAGNESIUM BASE ALLOYS.—Magnesium Elektron, Ltd., C. J. P. Ball, and F. A. Fox. 24033.

DIMETHYL ESTER OF METHYL 3-methoxy pyridine 4.5ldi-carboxylic acid.—Merck and Co., Inc. (United States, Sept. 3, '38.) 24012.

Specifications Accepted with Date of Application

MOULDS, particularly for moulding synthetic resin.—R. T. Stock. Feb. 15, 1938. 511,497.

DE-WAXING OF OILS.—Aktiebolaget Separator-Nobel. Feb. 18, 1937. 511,498.

RESIN COMPOSITIONS.—B. J. Wood, and Imperial Chemical Industries, Ltd. Feb. 16, 1938. 511,368.

ENAMELLING ARTICLES with a non-radioactive luminous substance. R. Schriml and G. Kaiser. Feb. 17, 1937. 511,436.

PREPARATION OF PALE PAINT, varnish and enamel vehicles, and coating compositions containing said vehicles.—Resinous Products and Chemical Co. March 6, 1937. 511,571.

CRUCIBLE FURNACES.—I. Hall. Feb. 18, 1938. 511,572.

MUFFLE OR CRUCIBLE FURNACES.—I. Hall. Feb. 18, 1938. 511,573.

PRODUCTION OF SYNTHETIC RESINS.—Albert Products, Ltd. March 8, 1937. (Addition to 409,397.) 511,511.

UTILISATION OF GRASS and other green crops.—R. E. Slade, J. H. Birkinshaw, and Imperial Chemical Industries, Ltd. Feb. 18, 1938. 511,525.

OPTICAL REAR PROJECTION SCREENS.—W. H. Moss. Feb. 19, 1938. 511,578.

CATALYTIC DEHYDRATION OF ALCOHOLS.—Distillers Co., Ltd., and H. M. Stanley. Feb. 21, 1938. 511,534.

LEAD CHROMATE PIGMENTS and their manufacture.—E. I. du Pont de Nemours and Co. Feb. 20, 1937. 511,542.

MANUFACTURE OF WAX MODIFYING AGENTS.—Standard Oil Development Co. May 26, 1937. 511,207.

PRODUCING POLYMERISATION PRODUCTS OF OLEFINES.—Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij. April 19, 1937. 511,556.

MANUFACTURE OF COVERED AND UNCOVERED STRATIFIED RUBBER THREAD.—Soc. Internationale de Participations Industrielles et Commerciales Soc. Anon. June 2, 1937. 511,219.

PRODUCTION OF AMMONIUM SULPHATE.—De Directie Van De Staatsmijnen in Limburg. June 9, 1937. 511,390.

SYNTHETIC RESINS.—British Thomson-Houston Co., Ltd. June 25, 1937. 511,223.

CARBOXYLATION OF ALKALI METAL SALTS OF PHENOLS.—Calco Chemical Co., Inc. July 31, 1937. 511,393.

PURIFYING HYDROCARBON OILS.—H. Rostin. Aug. 11, 1938. 511,398.

CYCLIC SUBSTITUTED DICHLORINATED ALIPHATIC HYDROCARBONS, and processes of preparing the same.—Armour and Co. Nov. 12, 1937. 511,233.

SOLVENT EXTRACTION OF MINERAL OILS.—C. Arnold (Standard Oil Development Co.). Sept. 29, 1938. 511,237.

METAL PASTE PIGMENTS.—Aluminium Co. of America. Nov. 11, 1937. 511,242.

HYDRATION OF OLEFINES.—Usines de Melle. Nov. 17, 1937. 511,247.

LUBRICATION OF TEXTILE FIBRES.—Monsanto Chemical Co. Feb. 14, 1938. 511,566.

RECOVERY OF OIL from the bones of whales extracted by steam in rotary digesters.—Aktiebolaget Separator, Lever Bros. and Unilever, Ltd., and B. R. Bostock. Dec. 21, 1938. 511,264.

APPARATUS FOR THE POLYMERISATION OF NORMALLY GASEOUS OLEFINS and/or the hydrogenation of olefinic polymers to form motor fuel hydrocarbons.—Universal Oil Products Co. Aug. 23, 1937. (Divided out of 511,181.) 511,349.

Weekly Prices of British Chemical Products

THERE is little new business being conducted in the general chemical market this week. Generally speaking, new business is not being accepted for the moment, holders of stocks preferring to wait until the market settles down. Ex-contract requirements, however, are being maintained and deliveries are going forward regularly. The convention quotations for lead oxides and white lead have been raised by £1 per ton. In the coal tar section quotations are irregular and many dealers are not offering.

Price Changes

Rises: Red Lead.

MANCHESTER.—The outbreak of war has resulted in calm trading conditions on the Manchester chemical market during the past week, although for the time being prices must be regarded as nominal in several directions, particularly in respect of imported products. The tone of the market as a whole is firm. Contract deliveries of most classes of products have been on steady lines and a good demand has been reported for textile chemicals. In the tar products market values of the light classes are all maintained and a brisk movement into consumption has been reported.

GLASGOW. — The Scottish heavy chemical market has experienced a very brisk demand for chemicals of all types with high prices ruling in all quarters.

General Chemicals

ACETONE.—£39 to £43 per ton, according to quantity.

ACETIC ACID.—Tech., 80%, £30 5s. per ton; pure 80%, £32 5s.; tech., 40%, £15 12s. 6d. to £18 12s. 6d.; tech., 60%, £23 10s. to £25 10s. MANCHESTER: 80%, commercial, £30 5s.; tech., glacial, £42 to £46.

ALUM.—Loose lump, £8 7s. 6d. per ton d/d; GLASGOW: Ground, £10 7s. 6d. per ton; lump, £9 17s. 6d.

ALUMINIUM SULPHATE.—£7 5s. 0d. per ton d/d Lancs.

AMMONIA, ANHYDROUS.—Spot, 1s. to 1s. 1d. per lb. d/d in cylinders.

AMMONIUM CARBONATE.—£20 per ton d/d in 5 cwt. casks.

AMMONIUM CHLORIDE (see Salammoniac).—Firsts, lump, spot, £42 17s. 6d. per ton; d/d address in barrels. Dog-tooth crystals, £35 per ton; fine white crystals, £18 per ton, in casks, ex store. GLASGOW: Large crystals, in casks, £37 10s.

AMMONIUM DICHROMATE.—9½d. per lb. d/d U.K.

ANTIMONY OXIDE.—£68 per ton.

ARSENIC.—Continental material £10 10s. per ton c.i.f., U.K. ports; Cornish White, £12 5s. to £12 10s. per ton f.o.r., mines, according to quantity. MANCHESTER: White powdered Cornish, £15 10s. per ton, ex store.

BARIUM CHLORIDE.—£11 10s. to £12 10s. per ton in casks ex store. GLASGOW: £12 per ton.

BLEACHING POWDER.—Spot, 35/37%, £9 5s. per ton in casks, special terms for contract. GLASGOW: £9 5s. per ton net ex store.

BORAX COMMERCIAL.—Granulated, £16 per ton; crystal, £17; powdered, £17 10s.; extra finely powdered, £18 10s., packed in 1-cwt. bags, carriage paid home to buyers' premises within the United Kingdom in 1-ton lots. GLASGOW: Granulated, £16 per ton in 1-cwt. bags, carriage paid.

BORIC ACID.—Commercial granulated, £28 10s. per ton; crystal, £29 10s.; powdered, £30 10s.; extra finely powdered, £32 10s. in 1-cwt. bags, carriage paid home to buyers' premises within the United Kingdom in 1-ton lots. GLASGOW: Crystals, £29 10s.; powdered, £30 10s. 1-cwt. bags in 1-ton lots.

CALCIUM BISULPHITE.—£6 10s. per ton f.o.r. London.

CALCIUM CHLORIDE.—GLASGOW: 70/75% solid, £5 12s. 6d. per ton ex store.

CHARCOAL, LUMP.—£6 to £6 10s. per ton, ex wharf. Granulated, £7 to £9 per ton according to grade and locality.

CHLORINE, LIQUID.—£18 15s. per ton, seller's tank wagons, carriage paid to buyer's sidings; £19 5s. per ton, d/d in 16/17 cwt. drums (3-drum lots); £19 10s. per ton d/d in 10-cwt. drums (4-drum lots); 4⅜d. per lb. d/d station in single 70-lb. cylinders.

CHROMETAN.—Crystals, 2⅝d. per lb.; liquor, £13 per ton d/d station in drums.

CHROMIC ACID.—9d. per lb., less 2½%; d/d U.K.

CHROMIC OXIDE.—11½d. per lb.; d/d U.K.

CITRIC ACID.—1s. 0½d. per lb. MANCHESTER: 1s. 0¼d. GLASGOW: B.P. crystals, 1s. 0¼d. per lb; less 5%, ex store.

COPPER SULPHATE.—£18 5s. per ton, less 2% in bags. MANCHESTER: £19 per ton f.o.b. GLASGOW: £19 10s. per ton, less 5%. Liverpool in casks.

CREAM OF TARTAR.—100%, £4 12s. per cwt., less 2½%. GLASGOW: 99%, £4 12s. per cwt. in 5-cwt. casks.

FORMALDEHYDE.—£20-£22 per ton.

FORMIC ACID.—85%, in carboys, ton lots, £42 to £47 per ton.

GLYCERINE.—Chemically pure, double distilled, 1,260 s.g., in tins, £3 10s. to £4 10s. per cwt. according to quantity; in drums, £3 2s. 6d. to £3 16s. 0d. Refined pale straw industrial, 5s. per cwt. less than chemically pure.

HYDROCHLORIC ACID.—Spot, 5s. 6d. to 8s. carboy d/d according to purity, strength and locality.

IODINE.—Resublimed B.P., 6s. 9d. per lb. in 7 lb. lots.

LACTIC ACID.—(Not less than ton lots). Dark tech., 50% by vol., £24 10s. per ton; 50% by weight, £28 10s.; 80% by weight, £50; pale tech., 50% by vol., £28; 50% by weight, £33; 80% by weight, £55; edible, 50%, by vol., £41. One ton lots ex works, barrels free.

LEAD ACETATE.—LONDON: White, £31 10s. ton lots; brown, £35. MANCHESTER: White, £31; brown, £30. GLASGOW: White crystals, £30; brown, £1 per ton less.

LEAD NITRATE.—£27 per ton for 1-ton lots.

LEAD, RED.—£32 15s. 0d. 10 cwt. to 1 ton, less 2½% carriage paid. GLASGOW: £31 per ton, less 2½% carriage paid for 2-ton lots.

LITHARGE.—GLASGOW: Ground, £31 per ton, less 2½%, carriage paid for 2-ton lots.

MAGNESITE.—Calcined, in bags, ex works, about £8 per ton.

MAGNESIUM CHLORIDE.—Solid (ex wharf) £5 10s. per ton. GLASGOW: £7 5s. per ton.

MAGNESIUM SULPHATE.—Commercial, £5 10s. per ton, ex wharf.

MERCURY PRODUCTS.—Ammoniated B.P. (white precip.), lump, 6s. 5d. per lb.; powder B.P., 6s. 7d.; bichloride B.P. (corros. sub.), 5s. 8d.; powder B.P., 5s. 1d.; chloride B.P. (calomel), 6s. 2d.; red oxide cryst. (red precip.), 7s. 6d.; levig, 6s. 9d.; yellow oxide B.P. 6s. 10d.; persulphate white B.P.C., 6s. 7d.; sulphide black (hyd. sulph. cum. sulph. 50%), 6s. 6d. For quantities under 112 lb., 1d. extra; under 28 lb., 5d. extra.

METHYLATED SPIRIT.—61 O.P. industrial, 1s. 5d. to 2s. per gal.; pyridinised industrial, 1s. 7d. to 2s. 2d.; mineralised, 2s. 6d. to 3s. Spirit 64 O.P. is 1d. more in all cases and the range of prices is according to quantities.

NITRIC ACID.—Spot, £25 to £30 per ton according to strength, quantity and destination.

OXALIC ACID.—£48 15s. to £57 10s. per ton, according to packages and position. MANCHESTER: £49 to £55 per ton ex store. GLASGOW: £2 9s. per cwt. in casks.

PARAFFIN WAX.—GLASGOW: 3¾d. per lb.

POTASH, CAUSTIC.—Solid, £33 5s. to £38 per ton according to quantity, ex store; broken, £40 per ton. MANCHESTER: £38.

POTASSIUM CHLORATE.—£36 7s. 6d. per ton. MANCHESTER: £37 per ton. GLASGOW: 4¼d. per lb.

POTASSIUM DICHROMATE.—5¼d. per lb. carriage paid. GLASGOW: 5¼d. per lb., net, carriage paid.

POTASSIUM CHROMATE.—9d. per lb. d/d U.K.

POTASSIUM IODIDE.—B.P. 6s. 3d. per lb. in 7 lb. lots.

POTASSIUM NITRATE.—Small granular crystals, £24 to £27 per ton ex store, according to quantity.

POTASSIUM PERMANGANATE.—LONDON: 9¼d to 10¼d. per lb. MANCHESTER: B.P. 9¾d. to 11¼d. GLASGOW: B.P. Crystals, 10¾d.

POTASSIUM PRUSSIATE.—6d. to 6½d. per lb. MANCHESTER: Yellow, 6d. to 6¼d.

PRUSSIATE OF POTASH CRYSTALS.—In casks, 6¾d. per lb. net, ex store.

SALT CAKE.—Unground, spot, £3 8s. 6d. per ton.

SODA ASH.—Light 98/100%, £5 17s. 6d. per ton f.o.r. in bags.

SODA, CAUSTIC.—Solid, 76/77° spot, £13 10s. per ton d/d station.

SODA CRYSTALS.—Spot, £5 to £5 5s. per ton d/d station or ex depot in 2-cwt. bags.

SODIUM ACETATE.—£19-£20 per ton carriage paid North. GLASGOW: £18 10s. per ton net ex store.

SODIUM BICARBONATE.—Refined spot, £10 10s. per ton d/d station in bags in 1-ton lots. MANCHESTER: £10 15s. GLASGOW: £13 5s. per ton in 1 cwt. kegs, £11 5s. per ton in 2-cwt. bags.

SODIUM BISULPHITE POWDER.—60/62%, £12 10s. to £14 per ton d/d in 2-ton lots for home trade.

SODIUM CARBONATE MONOHYDRATE.—£20 per ton d/d in minimum ton lots in 2 cwt. free bags.
SODIUM CHLORATE.—£27 10s. to £32 per ton. GLASGOW: £1 11s. per cwt., minimum 3 cwt. lots.
SODIUM DICHROMATE.—Crystals cake and powder 4½d. per lb. net d/d U.K. with rebates for contracts. GLASGOW: 4¼d. per lb., carriage paid.
SODIUM CHROMATE.—4½d. per lb. d/d U.K.
SODIUM HYPOSULPHITE.—Pea crystals, £15 5s. per ton for 2-ton lots; commercial, £11 5s. per ton. MANCHESTER: Commercial, £11; photographic, £15 10s.
SODIUM METASILICATE.—£14 5s. per ton, d/d U.K. in cwt. bags.
SODIUM NITRATE.—Refined, £8 5s. per ton for 6-ton lots d/d. GLASGOW: £1 12s. per cwt. in 1-cwt. kegs, net, ex store.
SODIUM NITRITE.—£18 5s. per ton for ton lots.
SODIUM PERBORATE.—10%, £4 per cwt. d/d in 1-cwt. drums.
SODIUM PHOSPHATE.—Di-sodium, £12 per ton delivered for ton lots. Tri-sodium, £16 10s. per ton delivered per ton lots.
SODIUM PRUSSIATE.—4d. per lb. for ton lots. MANCHESTER: 4¼d. to 5d. GLASGOW: 4d.
SODIUM SILICATE.—£8 2s. 6d. per ton.
SODIUM SULPHATE (GLAUBER SALTS).—£3 per ton d/d.
SODIUM SULPHATE (SALT CAKE).—Unground spot, £3 to £3 10s. per ton d/d station in bulk. MANCHESTER: £3 10s.
SODIUM SULPHIDE.—Solid 60/62%, Spot, £11 15s. per ton d/d in drums; crystals, 30/32%, £9 per ton d/d in casks. MANCHESTER: Concentrated solid, 60/62%, £11; commercial, £8 10s.
SODIUM SULPHITE.—Pea crystals, spot, £14 10s. per ton d/d station in kegs.
SULPHUR PRECIP.—B.P., £55 to £60 per ton according to quantity. Commercial, £50 to £55.
SULPHURIC ACID.—168° Tw., £4 11s. to £5 1s. per ton; 140° Tw., arsenic-free, £3 to £3 10s.; 140° Tw., arsenious, £2 10s.
TARTARIC ACID.— 1s. 1½d. per lb. less 5%, carriage paid for lots of 5 cwt. and upwards. MANCHESTER: 1s. 1¼d. per lb. GLASGOW: 1s. 1½d. per lb., 5%, ex store.
ZINC SULPHATE.—Tech., £11 10s. f.o.r., in 2-cwt. bags.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 7½d. to 1s. 2½d. per lb., according to quality. Crimson, 1s. 6½d. to 1s. 8d. per lb.
ARSENIC SULPHIDE.—Yellow, 1s. 5d. to 1s. 7d. per lb.
BARYTES.—£6 to £6 10s. per ton, according to quality.
CADMIUM SULPHIDE.—2s. 11d. to 3s. 2d. per lb.
CARBON BLACK.—3⅜d. to 4 1/16d. per lb., ex store.
CARBON DISULPHIDE.—£31 to £33 per ton, according to quantity, drums extra.
CARBON TETRACHLORIDE.—£41 to £46 per ton, according to quantity, drums extra.
CHROMIUM OXIDE.—Green, 11½d. per lb.
DIPHENYLGUANIDINE.—2s. 2d. per lb.
INDIA-RUBBER SUBSTITUTES.—White, 4½d. to 5d. per lb.; dark 3⅜d. to 4⅜d. per lb.
LAMP BLACK.—£24 to £26 per ton del., according to quantity. Vegetable black, £35 per ton upwards.
LEAD HYPOSULPHITE.—9d. per lb.
LITHOPONE.—Spot, 30%, £16 10s. per ton, 2-ton lots d/d in bags.
SULPHUR.—£9 to £9 5s. per ton. SULPHUR PRECIP. B.P., £55 to £60 per ton. SULPHUR PRECIP. COMM., £50 to £55 per ton.
SULPHUR CHLORIDE.—5d. to 7d. per lb., according to quantity.
VERMILION.—Pale, or deep, 5s. per lb., 1-cwt. lots.
ZINC SULPHIDE.—£58 to £60 per ton in casks ex store, smaller quantities up to 1s. per lb.

Nitrogen Fertilisers

AMMONIUM SULPHATE.—The following prices have been announced for neutral quality basis 20.6% nitrogen, in 6-ton lots delivered farmer's nearest station up to June 30, 1940; September, £7 5s.; October, £7 6s. 6d.; November, £7 8s.; December, £7 9s. 6d.; January, 1940; £7 11s., February £7 12s. 6d.; March/June, £7 14s.
CALCIUM CYANAMIDE.—The following prices are for delivery in 5-ton lots, carriage paid to any railway station in Great Britain up to June 30, 1940; September £8 2s. 6d.; October £8 3s. 9d.; November £8 5s.; December, £8 6s. 3d.; January, 1940, £8 7s. 6d.; February £8 8s. 9d.; March £8 10s.; April/June, £8 11s. 3d.
NITRO-CHALK.—£7 10s. 6d. per ton up to June 30, 1940.
SODIUM NITRATE.—£8 5s. per ton for delivery up to June 30, 1940.
CONCENTRATED COMPLETE FERTILISERS.—£11 4s. to £11 13s. per ton in 6-ton lots to farmer's nearest station.
AMMONIUM PHOSPHATE FERTILISERS.—£10 19s. 6d. to £14 16s. 6d. per ton in 6-ton lots to farmer's nearest station.

Coal Tar Products

BENZOL.—At works, crude, 9½d. to 10d. per gal.; standard motor, 1s. 3½d. to 1s. 4d.; 90%, 1s. 4½d. to 1s. 5d., pure 1s. 8½d. to 1s. 9. MANCHESTER: Crude, 1s. 0½d. to 1s. 0¾d. per gal.; pure, 1s. 8d. to 1s. 8½d. per gal.; motor grade 1s. 6¼d.
CARBOLIC ACID.—Crystals, 6⅝d. to 7⅛d. per lb., small quantities would be dearer; Crude, 60's 1s. 7d. to 1s. 10d.; dehydrated, 1s. 9d. to 2s. per gal., according to specification; Pale, 99/100%, per lb. f.o.b. in drums; crude, 2s. 1d. per gal.
CREOSOTE.—Home trade, 3⅜d. to 4d. per gal., f.o.r., makers' works; exports 6d. to 6¼d. per gal., according to grade. MANCHESTER: 3¼d. to 4¼d.
CRESYLIC ACID.—97/99%, 1s. 5d. to 1s. 8d.; 99/100%, 2s. to 2s. 6d. per gal., according to specification. MANCHESTER: Pale, 99/100%, 1s. 9d.
NAPHTHA.—Solvent, 90/160, 1s. 6d. to 1s. 7d. per gal.; solvent, 95/160%, 1s. 7d. to 1s. 8d., naked at works; heavy 90/190%, 1s. 1¼d. to 1s. 3d. per gal., naked at works, according to quantity. MANCHESTER: 90/160%, 1s. 5d. to 1s. 7d. per gal.
NAPTHALENE.—Crude, whizzed or hot pressed, £6 to £6 10s. per ton; purified crystals, £9 per ton in 2-cwt. bags. LONDON: Fire lighter quality, £3 to £4 10s. per ton. MANCHESTER: Refined, £10 10s. to £11 10s. 0d. per ton f.o.b.
PITCH.—Medium, soft, 26s. per ton, f.o.b. MANCHESTER: 24s. f.o.b., East Coast.
PYRIDINE.—90/140%, 14s. 6d. to 15s. per gal.; 90/160%, 11s. 3d. to 11s. 9d. per gal.; 90/180%, 3s. to 4s. per gal. f.o.b. MANCHESTER: 11s. to 14s. per gallon.
TOLUOL.—90%, 2s. 1d. to 2s. 2d. per gal.; pure 2s. 6d. to 2s. 7d. MANCHESTER: Pure, 2s. 5d. per gallon, naked.
XYLOL.—Commercial, 2s. 3d. per gal.; pure, 2s. 5d. MANCHESTER: 2s. 4d. per gallon.

Wood Distillation Products

CALCIUM ACETATE.—Brown, £6 15s. to £9 5s. per ton; grey, £8 to £8 5s. MANCHESTER: Brown, £8; grey, £9 10s.
METHYL ACETONE.—40.50%, £32 to £35 per ton.
WOOD CREOSOTE.—Unrefined, 6d. to 8d. per gal., according to boiling range.
WOOD NAPHTHA, MISCIBLE.— 2s. 8d. to 3s. per gal.; solvent, 3s. to 3s. 5d. per gal.
WOOD TAR.—£3 to £8 per ton, according to quality.

Intermediates and Dyes

ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.
ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.
BENZALDEHYDE.—1s. 10d. per lb., for cwt. lots, net packages.
BENZIDINE, HCl.—2s. 7½d. per lb., 100% as base, in casks.
BENZOIC ACID, 1914 B.P. (ex toluol).—1s. 11d. per lb. d/d buyer's works.
m-CRESOL 98/100%.—1s. 8d. to 1s. 9d. per lb. in ton lots.
o-CRESOL 30/31° C.—6½d. to 7½d. per lb. in 1-ton lots.
p-CRESOL 34/35° C.— 1s. 7d. to 1s. 8d. per lb. in ton lots.
DICHLORANILINE.—2s. 1½d. to 2s 5½d. per lb.
DIMETHYLANILINE.—Spot, 1s. 7½d. per lb., package extra.
DINITROBENZENE.—7½d. per lb.
DINITROCHLORBENZENE, SOLID.—£79 5s. per ton.
DINITROTOLUENE.—48/50° C., 8½d. per lb.; 66/68° C., 11d.
DIPHENYLAMINE.—Spot, 2s. 3d. per lb.; d/d buyer's works.
GAMMA ACID, Spot, 4s. 4½d. per lb. 100%, d/d buyer's works.
H ACID.—Spot, 2s. 7d. per lb.; 100%, d/d buyer's works.
NAPHTHIONIC ACID.—1s. 10d. per lb.
β-NAPHTHOL.—£97 per ton; flake, £94 8s. per ton.
a-NAPHTHYLAMINE.—Lumps, 1s. 1d. per lb.
β-NAPHTHYLAMINE.—Spot, 3s. per lb.; d/d buyer's works.
NEVILLE AND WINTHER'S ACID.—Spot, 3s. 3½d. per lb. 100%.
o-NITRANILINE.—4s. 3½d. per lb.
m-NITRANILINE.—Spot, 2s. 10d. per lb. d/d buyer's works.
p-NITRANILINE.—Spot, 1s. 10d. to 1s. 11d. per lb. d/d buyer's works.
NITROBENZENE.—Spot, 4½d. to 5d. per lb., in 90-gal. drums, drums extra, 1-ton lots d/d buyer's works.
NITRONAPHTHALENE.—9½d. per lb.; P.G., 1s. 0½d. per lb.
SODIUM NAPHTHIONATE.—Spot, 1s. 11d. per lb.; 100% d/d buyer's works.
SULPHANILIC ACID.—Spot, 8½d. per lb. 100%, d/d buyer's works.
o-TOLUIDINE.—10½d. per lb., in 8/10 cwt. drums, drums extra.
p-TOLUIDINE.—1s. 10½d. per lb., in casks.
m-XYLIDINE ACETATE.—4s. 3d. per lb., 100%.

Latest Oil Prices

LONDON.—Trading in oils continued to be suspended pending the publication of the Government's fixed prices.
HULL.—The market for oils remained closed pending the fixing of minimum prices.

Chemical and Allied Stocks and Shares

AS in all other directions the stock and share markets have shown determination to accelerate whatever decisions are considered necessary by the authorities to facilitate the adjustment of activities to war-time conditions. When business was resumed in the stock and share markets earlier in the week it was only on the basis of inter-office share transactions, but it was shown that there was again little disposition to sell, and in fact there was a certain amount of demand for shares of companies which it is thought in some quarters should be able to continue to show satisfactory results. The absence of selling and indications that buyers were not lacking provided sufficient evidence that calm conditions continued to rule in the City, and subsequently the re-opening of the Stock Exchange was announced.

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As was to be expected the volume of business has been small, and apart from the usually-active and widely-held shares, prices were not tested. Among securities of companies identified with the chemical and allied trades, a fairly steady tendency was shown by shares of concerns which may benefit from the demand for fertilisers and similar products. Fison Packard were, however, around the same price as that given in these notes a week ago, while Borax Consolidated deferred were 20s. 7½d. Imperial Chemical were well maintained around 28s. 9d., while a slightly better price ruled for Imperial Smelting ordinary.

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Associated Cement had a firmer appearance, while Courtaulds and many other widely-held industrial securities were inclined to improve. It is realised, however, that it is difficult to assess to what extent various trades and industries will be affected by the mobilisation of commercial and other resources required by the war. Paint shares have been quite well maintained. As usual British Match ordinary continued to be held firmly. Distillers were inclined to fluctuate moderately, but both Lever & Unilever and Lever N.V. had a steadier appearance. Barry & Staines and Michael Nairn were firm features but were inactive.

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Iron and steel shares were inclined to make slightly lower prices, but Staveley were steadier, the past year's results of the last-named company having created a satisfactory impression. Richard Thomas shares and debentures were little changed on balance. The general assumption is that most iron and steel companies should be able to maintain their dividends quite well in respect of the current year.

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Monsanto Chemicals 5½ per cent. preference were 20s. 7½d., while British Drug Houses were again quoted around 21s., but this was apparently not tested by business. Reckitt & Sons at 102s. 6d. were better, and United Molasses were little changed on balance. Boots Drug were lower but Sangers, Timothy Whites & Taylors and Beecham's Pills shares were little changed. United Premier Oil & Cake ordinary were held steadily, and British Oil & Cake Mills preferred ordinary were well maintained in price. Cellon ordinary were around 15s. 3d., but were inactive, and, as in many other directions, it would appear that prices were not tested adequately this week.

"Shell" and other leading oil shares subsequently showed a better tendency in sympathy with the surrounding market trend.

Company News

Savory and Moore, Ltd., manufacturing and retail chemists, have declared that the fixed half-yearly dividends on the 6 per cent. cumulative preference shares and the 7½ per cent. cumulative preference (participating) shares for the half-year ending September 30, 1939, will be paid on that date.

New Companies Registered

British Scientex, Ltd. (356,068).—Private company. Capital: £10,000 in 10,000 ordinary shares of £1 each. To carry on business as manufacturers of and dealers in chemicals, gases, drugs, medicines, etc. Subscribers: Bernard M. Manderson and Alexander W. Sampson. Solicitors: Pickard & Co., 87 Regent Street, W.1. Registered office: Kent House, 87 Regent Street, W.1.

Foreman Lacquers, Ltd. 356,309.—Private company. Capital £600 in 600 shares of £1 each. To carry on the business of manufacturers of and dealers in cellulose lacquers, and cellulose and other paints, varnishes, oils and pigments, dyes, soap, celluloid and plastic materials, and chemical, industrial and other preparations, etc. Directors: Barnett Foreman, 8 Forburg Road, N.16; Louis Mindel.

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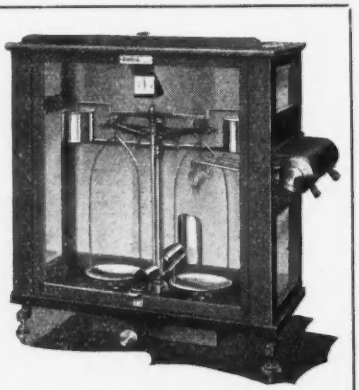
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